

A NEW KEY FOR BOLTERIA WITH DESCRIPTIONS
OF TWO NEW SPECIES (HEMIPTERA,
MIRIDAE).*

By HARRY H. KNIGHT, Ames, Iowa.

The species of *Bolteria* have been the subject of two previous papers by the writer (*Bul. Brook. Ent. Soc.*, xiv, 1919, pp. 126-128, and vol. xvi, 1921, pp. 73-74). In the present paper two new species are described and a new key provided for the separation of all the known species.

***Bolteria nicholi*, n. sp.**

Distinguished in the key; small ovate form, very distinct in coloration; dark reddish to fuscous, basal edge of pronotum white, apical half of scutellum and more or less along claval suture, pale.

♂. Length 3.7 mm., width 1.8 mm. Head: width 1.2 mm., vertex .61 mm. Rostrum, length 1.6 mm., reaching slightly beyond hind coxae. Antennae: segment I, length .34 mm., greenish yellow, a dark red line beneath which terminates basally in a narrow, paler red annulus; II, 1.52 mm. greenish yellow; III, .55 mm., brownish to fuscous; IV, .47 mm., fuscous. Pronotum: length .78 mm., width at base 1.48 mm.

Dorsum rather thickly clothed with short, sericeous, silvery pubescence and intermixed with fine yellowish simple pubescent hairs. Coloration dark reddish to fuscous and varied with paler areas. Head largely pale, frons with five arcuate red lines each side of median line, basal carina margined with red in front and with black behind; tylus except base, lora, and bordering base of antennae above, black; rostrum dark red to piceous. Pronotal disk with basal edge white, median line usually paler, calli pale and marked with red, anterior margin of disk and a ray behind eye along lateral margin black. Scutellum pale, base black, gradually shading to reddish with irregular flecks of red invading the pale. Base of embolium and corium and more or less along claval suture pale. Cuneus chiefly dark red, narrow outer edge and basal angle white. Membrane fuscous, darker within the areoles, veins white. Ventral surface largely white, sternum blackish beneath, sutures of thorax and narrow base of coxae

* Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

more or less reddish to black; venter flecked and marked with dark red. Coxae white except base, femora dark red, white beneath, hind pair with anterior face white but with two series of red dots; tibiae pale, tarsi fuscous apically.

♀. Length 3.7 mm., width 1.8 mm. Head: width 1.26 mm., vertex .66 mm. Antennae: segment I, length .36 mm.; II, 1.48 mm.; III, .57 mm.; IV, broken. Pronotum: length .80 mm., width at base 1.48 mm. Very similar to the male in coloration and pubescence.

Holotype: ♂, June 18, 1925, Williams, Arizona (A. A. Nichol); author's collection. *Allotype*: same data as the type. *Paratypes*: 10 ♂ ♀, taken with the types on *Pinus edulis* which is doubtless the host plant. ♂ June 15, ♂ ♀ June 22, ♂ June 24, 1925, Williams, Arizona, alt. 7000 ft. (A. A. Nichol). Some of these specimens were taken on *Juniperus* sp. which suggests the possibility of a second host.

Named in honor of the collector, Mr. Andrew A. Nichol, to whom the author is indebted for many new and rare species of Miridae.

***Bolteria balli*, n. sp.**

Allied to *speciosa* Van D., but differs in the smaller size, reddish scutellum, pale cuneus with outer and inner margins only red, while the propleura and epimera of mesothorax are white.

♀. Length 4.6 mm., width 1.8 mm. Head: width 1.43 mm., vertex .68 mm. Rostrum length 2.46 mm., reaching upon first genital segment. Antennae: segment I, length .46 mm.; II, 1.83 mm.; III, broken; uniformly pale. Pronotum: length .83 mm., width at base 1.46 mm.

Coloration above and below rather uniformly light red, sternum scarcely darker; scutellum and frons with fine, pale, reticulate markings; vertex somewhat paler just in front of the carina; cuneus pale, more broadly so than in *speciosa*, narrow margins only red; propleura, epimeron of mesothorax, and legs including coxae, pale to white. Membrane fuscous, somewhat darker within the cells, veins reddish.

Holotype: ♀ June 23, 1913, Kanab, Utah (E. D. Ball); author's collection. Named in honor of the collector, Dr. E. D. Ball, to whom the writer is indebted for the specimen.

KEY TO THE SPECIES OF BOLTERIA.

1. Antennal segment I not equal to width of vertex.....2
 Antennal segment I, in length, greater than width of vertex
semipicta Blat.
2. Frons pale, transversely marked with red lines.....3
 Frons without distinct transverse lines.....5
3. Corium largely pale, with an arcuate dark stripe following the
 radial vein, thus dividing the pale.....4
 Corium rather uniformly dark red to fuscous, more or less
 pale at base and narrowly along claval suture; pronotum
 reddish to fuscous brown, disk and calli flecked with red;
 femora dark red, hind pair white on anterior aspect and
 with two rows of red spots; small ovate form, length 3.7 mm.
nicholi n. sp.
4. Clavus with a pale stripe running lengthwise through middle;
 pronotum with blackish spot or ray beginning at outer margin
 of callus and curving around behind toward middle of
 disk.....*amicta* Uhl.
 Clavus dark reddish to black, narrow margin bordering claval
 suture only, pale; pronotal disk white, without blackish ray
 extending around behind calli, although basal margin of
 disk is black.....*rubropallida* Kngt.
5. Head, pronotum and hemelytra largely bright red.....6
 Head and pronotum pale yellowish brown; hemelytra testaceous,
 clavus and apical area of the corium darkened with
 fuscous.....*luteifrons* Kngt.
6. Scutellum white, propleura red like the disk, epimera dark red
 to fuscous like the sternum; clavus blackish bordering the
 scutellum.....*speciosa* Van D.
 Scutellum red, although finely reticulate irrorate with paler;
 propleura and epimera of mesothorax white; clavus uniformly
 reddish like the corium.....*balli* n. sp.

The key includes *semipicta* Blatchley, a species described from Florida which the writer has not seen. The relatively narrow vertex which in width does not equal the length of the first antennal segment, strongly suggests that this species may not belong in the genus *Bolteria*.

Some time ago the writer indicated¹ that *rubropallida* Kngt. is a synonym of *amicta* Uhler. In working over the species of

¹ Bul. Brook. Ent. Soc., 1921, xvi, p. 73.

Bolteria to prepare the key here included, I discovered that two distinct color patterns are presented by the types of *rubropallida* Knegt. and specimens of *amicta* Uhler, although among the paratypes of *rubropallida* I find two specimens which are identical with *amicta*. Because of the manner in which these forms differ the writer is inclined to believe that *rubropallida* may represent something more than a mere color form of *amicta*. In *rubropallida* the pronotal disk remains white, while the clavus is uniformly blackish; in *amicta* the clavus is largely white, yet the pronotum has more black than *rubropallida*. Such is not the manner in which color forms of a single species are known to vary. If *rubropallida* is merely a color form of *amicta* showing a black clavus, then the pronotum should likewise be as dark as, if not darker, than in *amicta*.

The genus *Bolteria* is peculiar in the paucity of structural characters for separating the species, although with the possible exception of *rubropallida* we are dealing with species that are very evidently distinct; yet it is difficult to key them except by the aid of color characters. Perhaps species may even appear so similar as *amicta* and *rubropallida* and still be biologically distinct,—who knows? With more collecting of large series of specimens and careful observance of host relationships, we may be able to settle this as well as other interesting problems. It may be worth adding that I have before me for study, six specimens taken June 18 to June 24, 1925, Williams, Arizona (A. A. Nichol), all of which are typical *amicta* Uhler.

Note on Plea.—Nearly all of the *Plea striola* Fieber specimens I have examined from the United States have the flight wings reduced to mere pads. Furthermore, I have seen no direct evidence that they fly. However, I have a specimen taken by H. L. Dozier, Rio Piedras, P. R., Nov. 2, 1924, at light. Most of my South American specimens have been taken at lights.—H. B. HUNGERFORD, Lawrence, Kans.